

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) An internal combustion engine comprising:
 - two opposed cylinders, each cylinder having a cylinder liner adapted to accept two opposed pistons therein defining a combustion chamber therebetween, the opposed pistons adapted to reciprocate along a common axis, the cylinder liner further comprising intake ports and exhaust ports;
 - a crankshaft disposed between the cylinders, the crankshaft comprising journals;
 - a housing adapted to house the cylinders; and
 - a scavenge pump associated with each cylinder, the scavenge pump comprising a first scavenging chamber and a second scavenging chamber, the first scavenging chamber defined by an end of the housing and a plunger linked to one of the opposed pistons distal from the crankshaft, wherein the plunger is adapted to move in unison with the piston and to draw in a fluid from outside the housing and to expel fluid to the second scavenging chamber, the second scavenging chamber adapted to expel fluid into the combustion chamber through the intake ports.
2. (Original) The engine of claim 1 wherein the second scavenging chamber of each of the two cylinders are in fluid communication.

3. (Original) The engine of claim 1 wherein the crankshaft has asymmetrically arranged journals, the engine further comprising:

pushrods coupling one of the two opposed pistons proximate the crankshaft to at least one shared journal; and

pullrods coupling one of the two opposed pistons distal the crankshaft to at least one shared journal.

4. (Original) The engine of claim 1 wherein the second scavenging chamber of each of the two cylinders are not in fluid communication.

5. (Original) The engine of claim 1 wherein each pair of opposed pistons further comprises an outer piston distal from the crankshaft and an inner piston proximate the crankshaft, the engine further comprising:

at least one pushrod in urging engagement with each of the inner pistons at a first end and coupled to at least one shared journal on the crankshaft at a second end, wherein at least one pushrod comprises a second end comprising two tangs; and

at least one pullrod in urging engagement with each of the outer pistons and coupled to at least one shared journal on the crankshaft.

6. (amended) An internal combustion engine comprising:

at least two opposed cylinders, each cylinder comprising one pair of opposed pistons reciprocating along a common axis, each pair of opposing pistons ~~and an end of each opposed piston, in conjunction with a cylinder,~~ defining a combustion chamber therebetween; and

a crankshaft comprising a first journal and a second journal, each pair of opposed pistons further comprises an outer piston distal from the crankshaft and an inner piston proximate the crankshaft; ~~having at least one journal coupled to at least one pullrod and at least one pushrod for a pair of opposed pistons~~

at least one pair of pushrods, each pushrod of one pair of pushrods coupled with one of the inner pistons at a pushrod first end and coupled to the first journal on the crankshaft at a pushrod second end, wherein one of the pushrods comprises a pushrod second end comprising a single tang and the other pushrod comprises a pushrod second end comprising two tangs adapted to receive the single tang therebetween; and
at least one pair of pullrods, each pullrod of one pair of pullrods coupled with one of the outer pistons at a pullrod first end and coupled to the second journal on the crankshaft at a pullrod second end, wherein one of the pullrods comprises a pullrod second end comprising a single tang and the other pullrod comprises a pullrod second end comprising two tangs adapted to receive the single tang therebetween.

7. (Amended) The engine of claim 6 further comprising a second pair of pullrods, the crankshaft further comprising a third journal, the first journal positioned substantially between the second journal and third journal, each pullrod of the second pair of pullrods coupled with one of the outer pistons at a pullrod first end and coupled to the third journal at a pullrod second end, one of the pullrods comprises a pullrod second end comprising a single tang and the other pullrod comprises a pullrod second end comprising two tangs adapted to receive the single tang therebetween ~~wherein the one pair of opposed pistons comprises a first inner piston and a second inner piston, each inner piston linked to a push rod at one end and each push rod at a second end engaged to the one journal.~~

8. (Amended) The engine of claim 6 wherein the at least two opposed cylinders are located ~~connecting elements comprise:~~
~~— a forked push rod comprising two tangs connected to one inner piston and an interlocking push rod connected to a corresponding opposite inner piston, both push rods being movable on a common axis.~~

9. (Amended) The engine of ~~Claim~~ claim 6 further comprising:
a bearing element disposed between each of the ~~forked push rod and the~~
~~interlocking push rod at the connecting rod~~ two tangs and the single tang.
10. (Amended) The engine of claim 9 6 further comprising:
a scavenge pump associated with each cylinder, the scavenge pump comprising a
first scavenging chamber and a second scavenging chamber, the first
scavenging chamber defined by an end of a housing and a plunger linked to the
outer piston ~~one of the opposed outer pistons distal from the crankshaft~~, wherein
the plunger is adapted to move in unison with the piston and to draw in a fluid
from outside the housing and to expel fluid to the second scavenging chamber,
the second scavenging chamber adapted to expel fluid into the combustion
chamber.
11. (Amended) The engine of claim 9 ~~connecting rod of claim 9~~ further comprising
a lubrication port disposed in one of the single tang and the two tangs and associated conduit
adapted to provide ~~so that so that a lubricant may be presented to the bearing element~~.
12. (Original) The engine of claim 6 wherein the crankshaft is a built-up
crankshaft.
13. (Amended) An internal combustion engine comprising:
two pairs of opposed pistons reciprocating along a common axis, and an end of each
opposed piston, in conjunction with a cylinder, defining a combustion chamber;
a crankshaft disposed between the two pairs of opposed pistons, the crankshaft
having a first journal; and

a connecting element linking each piston at an end of the piston opposite the combustion chamber side, wherein at least a pair of connecting elements coupled to the first journal and ~~are~~ movably aligned substantially along a common axis.

14. (Amended) The engine of claim 13 further comprising at least two pairs of connecting elements, the crankshaft having a second journal, wherein each pair of connecting elements is coupled to one of the first and second journals and is aligned on an associated common axis.

15. (Original) An engine comprising:
an internal combustion engine comprising two opposed cylinders, each cylinder comprising at least one pair of opposed pistons reciprocating along a common axis, and an end of each opposed piston, in conjunction with a cylinder, defining a combustion chamber;
a crankshaft connected to at least one piston by at least one connecting element, the crankshaft having at least one journal for coupling the connecting element; and
a scavenge pump associated with each cylinder, the scavenge pump comprising a first scavenging chamber and a second scavenging chamber, the first scavenging chamber defined by an end of a housing and a plunger linked to one of the opposed pistons distal from the crankshaft, wherein the plunger is adapted to move in unison with the piston and to draw in a fluid from outside the housing and to expel fluid to the second scavenging chamber, the second scavenging chamber adapted to expel fluid into the combustion chamber.

16. (Original) The engine of claim 15 wherein external radiating fins are disposed externally around a portion of the cylinder for heat transfer.

17. (Original) The engine of claim 16 wherein the radiating fins comprise fins having a helical pattern.

18 (Original) An engine comprising:
an internal combustion engine comprising at least two opposed cylinders, each cylinder comprising at least one pair of opposed pistons reciprocating along a common axis, and an end of each opposed piston, in conjunction with a cylinder, defining a combustion chamber; and
the pair of opposed pistons comprising an inner piston and an outer piston;
the cylinder comprises at least one exhaust port disposed so that reciprocation of the inner piston opens and closes the exhaust port, and at least one intake port disposed so that reciprocation of the outer piston opens and closes the intake port;
a crankshaft linked to the inner piston by a push rod, and the crankshaft linked to the outer piston by an pull rod wherein rotation of the crankshaft causes asymmetric port timing.

19. (Original) The engine of claim 18 further comprising:

a scavenge pump associated with each cylinder, the scavenge pump comprising a first scavenging chamber and a second scavenging chamber, the first scavenging chamber defined by an end of a housing and a plunger linked to one of the opposed pistons distal from the crankshaft, wherein the plunger is adapted to move in unison with the piston and to draw in a fluid from outside the housing and to expel fluid to the second scavenging chamber, the second scavenging chamber adapted to expel fluid into the combustion chamber.

20. (Original) The engine of claim 19 wherein the crankshaft journals are arranged to present the opening of the intake port after the closing of the exhaust port.

21. (Original) The engine of claim 18 wherein the crankshaft is adapted so that there is a phase angle of about 20 degrees between the intake ports and the exhaust ports.

22. (Original) An engine comprising:

a piston disposed in a cylinder, one end of the piston cooperating with the cylinder to form a combustion chamber, the other end of the piston linked to a plunger, the plunger moves in unison with the piston; and

a scavenge pump associated with the engine, the scavenge pump comprising

a first scavenge chamber adapted to receive the plunger.

23. (Original) The engine of claim 22 wherein the scavenge pump further comprises a second scavenge chamber in fluid communication with the first chamber; and

a transfer valve disposed between the first fluid chamber and the second fluid chamber so that fluid displaced by the plunger may be directed in one direction.

24. (Original) The engine of claim 22 wherein the scavenge pump further comprises:

a fluid transfer conduit having a transfer valve, the fluid transfer conduit being in fluid communication with the first scavenge chamber so that an external fluid may be introduced to the assembly.

25. (Original) The engine of claim 22 wherein the cylinder further comprises at least one intake port in fluid communication with the scavenge pump so that reciprocating motion of the plunger directs an external fluid into the cylinder.

26. (new) An internal combustion engine comprising:

at least two opposed cylinders, each cylinder including at least one first piston, the pistons in the opposing cylinders reciprocating along a common axis, a piston and its respective

cylinder, defining a combustion chamber; a crankshaft disposed between the cylinders comprising at least one journal, wherein the first pistons are each coupled to respective ends of inner-piston pushrods, and the opposite ends of the inner-piston pushrods are coupled to a common first journal on the crankshaft.

27. (new) The engine of claim 26 wherein a crank-shaft coupling-end of one push rod complementarily receives the crank-shaft coupling-end of the other pushrod.

28. (new) The engine of claim 26 further comprising a second piston in each cylinder to form a pair of opposed pistons in a cylinder, in each pair the second pistons being the outer pistons from the crankshaft, each pair movable on a common axis and defining a combustion chamber, and wherein the second pistons are each coupled to respective ends of outer-piston pullrods, and the opposite ends of the outer-piston pullrods are coupled to a common second journal on the crankshaft.

29. (new) The engine of claim 28 wherein a crank-shaft coupling-end of one pull rod complementarily receives the crank-shaft coupling-end of the other pullrod.

30. (new) A set of pullrods or pushrods adapted to couple to a common journal, according to claim 29.